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ROYAL GARDENS, KEW.

BULLETIN

OF

MISCELLANEOUS INFORMATION.

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XXIX.—COLONIAL FRUIT—(continued).

In *Bulletin* No. 11 for November, 1887, attention was drawn to the subject of fruit growing in British Colonies and a very comprehensive Report on the Fruits of Canada was given. In the present *Bulletin* it is intended to continue the subject and publish reports, which have been furnished by the Governments of other Colonies. These will add considerably to our knowledge of this comparatively new industry. It will be remembered that these reports have been prepared in response to a circular letter issued, at the instance of this establishment, by the Secretary of State for the Colonies.

The list of questions to which answers are now furnished was published in the *Bulletin* for November last, pp. 2–4. This list, if consulted, will afford a key to the arrangement of the Reports, and furnish those interested with the points to which the enquiry has been directed.

An important feature in the Reports now published is the prominence given to the quantity of fruit actually available for export in each colony. To this is added the months during which the fruit is in season and the prices usually paid for it locally.

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It was intended to publish the reports from the Australian Colonies, Tasmania, New Zealand, and the Cape of Good Hope in one series, so as to present a general review of the fruit industries of the Southern Hemisphere. In a subsequent series it was proposed to publish reports dealing exclusively with the fruits of the Tropical Colonies. So far, however, we have not received reports from New South Wales and Queensland, and hence these do not appear in the present *Bulletin*.

Victoria.

The Report received respecting the fruits of this Colony is of a very complete character. In forwarding the Report to the Government of Victoria, Mr. D. E. Martin, Secretary for Agriculture, summarizes the results as follows :—

As regards the quantities of each kind of fruit available for export, I may state that so far it appears to me that the quantities produced are not in excess of local requirements, but there is reason to believe that shortly the production will exceed our wants.

The whole of the fruits mentioned below are capable of being produced in much larger quantities than at present, and will be produced if sufficient inducement offers.

As regards the enquiry as to what steps are necessary to start or develop a fruit trade, and what inducements local men desire to open or extend a trade in fresh or preserved fruits, I may state that cheaper rates of freight by railway, a reliable agent in England, extra care in shipping and unshipping, together with cool chambers in the vessels, are considered essential.

In order to ascertain the views of the wholesale fruit dealers on the subject of exportation of fruit to England, I communicated with some of the dealers. By one I was informed that the experiment of exporting fruit had been tried and proved a failure. Another stated that the prices reported as having been realized at the Indian and Colonial Exhibition induced him to try a shipment of fruit as an experiment, and he found that owing, to the cost of packing, freight, and the many charges imposed by the consignees for commission, wharfage, rates, &c., resulted with the prices realized for the fruit in a loss of 50*l*. He charges 7 per cent. on his sales, and that covers everything, but at home they had no fixed scale.

Fruit-growers here could not be relied upon for packing and placing a first-class fruit in boxes ready for exporting, owing to the fact that they could obtain prices here for the fruit, as they at present sent it to market, which the prices they would obtain for the extra trouble and care would not recompense. Another thing is that there is not sufficient first-class fruit suitable for exporting grown here, and the want of material, such as cork sawdust, for packing fruit, is another drawback. The dealer above mentioned obtained 200 cases of lemons from Sydney in one shipment, and from indifferent packing and carelessness in handling the fruit, 50 per cent. of it was useless. He had also obtained fruit from Algiers, and owing to the difference in packing and handling, the quantity of the fruit unsuitable for disposal after its arrival here, was nil, although he had kept it without opening the boxes for a fortnight after its arrival. Foreign growers were educated to the manner of treating fruit which the growers here lacked. Here orchards were only

an auxiliary means of livelihood. The ready sale which growers here can obtain, does not necessitate that carefulness in gathering, sorting, and packing, which fruit requires; and the jam factory furnishes as ready a receptacle for bruised or damaged as for sound fruit. He knew of men who had brought their fruit to market in bags. In a catalogue of one of the leading wholesale men in London, quoting prices obtained for oranges, the prices ranged from 4*s*. to 6*s*. 6*d*., and two lots were disposed of from 8*s*. to 10*s*. per case, the latter being of a superior class. The prices obtained here would compare favourably with the prices quoted, and while the fact remained, growers here would not be induced to try exporting. The lowest price obtained here for apples is about 4*s*. a case. To export them at that price, the case would cost about 10*s*. by the time it was disposed of at home, owing to freight, repacking, commission, and other charges; and the case of apples would not realize that price. At present the colony is not in a position to dispose of its fruit in an export market. He stated the prices reported as having been obtained for fruit at the Indian and Colonial Exhibition were misleading, for the reason that such fruit as that which was disposed of at the Exhibition could not be procured here in sufficient quantity to export. He had obtained 160 cases of fruit from Tasmania to export, but owing to the lateness of the shipment in arriving here, only about 140 cases were trans-shipped, and the balance which remained here realized a better profit than the larger portion which was sent home. He could send fruit to New Zealand, by repacking, and land, and dispose of it there at a profitable price, but he did not think shipments could at present be sent to the English market to the same advantage. He had no doubt, however, but that ultimately as fruit-growing increased, and a better class of it was grown so as to meet the requirements of the home market, exportation would become a success.

The following is a list of Victorian fruit:—

Name.	When in Season.	Local Prices.
Grapes	February, March, and April	4*s*. to 8*s*. per case of 48 lbs.
Apple	January to September	3*s*. to 10*s*. per bushel.
Pear	„ „	2*s*. to 10*s*. per case of 48 lbs.
Apricot	January and February	5*s*. to 14*s*. „ „
Peach	December to April	4*s*. to 12*s*. „ „
Nectarine	January to March	5*s*. to 15*s*. „ „
Plum	December to April	2*s*. 6*d*. to 6*s* „ „
Cherry	November to January	3*s*. to 12*s*. „ „
Oranges	July to September	4*s*. to 12*s*. „ „
Lemons	„ „	7*s*. to 15*s*. „ „
Figs	January to March	5*s*. to 10*s*. „ „
Walnuts	March	7*s*. to 10*s*. „ „
Almonds	„	7*s*. to 9*s*. „ „
Quinces	January to March	2*s*. to 4*s*. „ „
Raspberry	January and February	12*s*. to 18*s*. per cwt.
Strawberry	November to January	15*s*. to 25*s*. „
Currants, red	December to February	12*s*. to 20*s*. „
Gooseberries	„ „	8*s*. to 12*s*. „

The Grape.

The grape is esteemed the premier fruit of the Australian Colonies. The demand for the produce of the vine is unlimited, as it can be used in such a variety of ways; as a table or dessert fruit, it is at once one of the most delicious and refreshing obtainable, and in the heat of summer invaluable for the invalid. It is believed the grapes of Victoria are superior for wine making to those of the sister colonies, but for raisin-making or distillation, probably South Australia or New South Wales would rank before us, as their grapes contain a greater amount of saccharine matter, although, when large plantations have been made in the Mallee Districts, the case might be materially changed.

The Apple.

No doubt this is also a fruit of the greatest importance, and since the introduction of blight-proof stocks can be grown on almost every kind of soil. Orchards, like vineyards, require proper drainage, and a large amount of intelligence and industry to keep them free from the insect plagues which are already decimating some of the best orchards of the Colony.

From the 16,000 or 18,000 different varieties of apples, perhaps a selection of from 40 to 50 would be found sufficient for most growers for export, cider, and drying. The exportation of the apple to England, India, and other places, combined with drying and cider making, will, in the near future, open up a great market for the orchardist.

The Pear.

This may be classed as a fruit almost equal to the apple, and can be used for exportation, home consumption (as dessert and cooking fruit), drying, and perry making. The tree grows rigorously, and is very prolific, coming into bearing at a much earlier period than in England or the Continent. Considerable shipments of this fruit were made to the Colonial and Indian Exhibition, and most satisfactory prices realized. For some of the choisest varieties the prices were fabulous; most varieties came to hand in excellent condition.

The Apricot.

This magnificent fruit is suited for any district where frosts are not prevalent, the bloom being easily destroyed by frost, or severe winds, or hail storms. When well-grown, it stands first as a jam fruit, is also a beautiful dessert, and when properly prepared by the evaporator, a rich sweetmeat of the highest flavour. There is always a good demand for fine fruit.

The Peach.

Like the apricot, this can also be grown in most parts of Victoria, but to obtain large well flavoured fruit, it requires to be irrigated. The black and green Aphis have of late years caused sad havoc among the peach trees, and the American disease known as the Yellows, has also made its appearance in our peach orchards. The cost of labour and remedies pretty well absorbs all the profits of the peach industry, and unless some cheaper method of destroying the Aphis can be found, they will scarcely pay for growing.

The Nectarine.

All that has been said of the peach applies to this very deliciously delicate fruit. Some of the varieties appear to resist the ravages of the Aphis better than the peach. These require good soil and good cultivation.

The Plum.

Plums of all descriptions grow well in most districts of Victoria, and for jam making and drying, are a most valuable fruit. The French and Italian prunes should be very much more extensively cultivated, and an unlimited demand exists for these in their dry state.

The Cherry.

This being one of the first fruits to come into the market, is always in great demand. Being chiefly used for dessert, and being very prolific, it is sold at prices within the reach of the poorest people. Some of the later varieties have been shipped to the neighbouring colonies, such as Queensland, New Zealand, &c., &c., and bring very remunerative prices.

The Orange and Lemon.

These fruits can be grown in Victoria, where frosts do not prevail, but require a moderate protection from hot winds in summer as well as from the frosts of winter. The lemon appears to be the hardier, and when it ripens here there is generally a good demand in the local market. Large plantations of lemons would be very valuable.

The Fig.

There are a great many varieties of this fruit, and the hardy sorts do well in and around Geelong. The varieties suitable for drying are those which should be most cultivated, and although a trifle smaller than some others, are very prolific, and very excellent as a dessert fruit. The demand for these, like the fruit of the vine, will be, at no distant date, unlimited. The cultivation of the fig is very simple, and the tree does not appear to be subject to so great a number of pests as many other kinds of fruit.

The Olive.

The olive trees thrive well in some parts of the Geelong District, and many of them fruit well; but in the early days of planting, a large number of a bastard kind was sent into the Colony, and these have been perfectly barren. These are remarkable for the large amount of scale blight, which is spreading wherever trees have been planted, and fruitful olives are in great danger of being entirely destroyed.

The Walnut.

This should be much more extensively planted. In the Gippsland and Western District they would grow to a great size. The timber in after years would become very valuable for cabinet work, while the fruit produces an excellent oil, in addition to being very popular for dessert.

Almonds.

Both bitter and sweet almonds arrive at great prefection, but the demand for them is limited at present, and consequently they are not a very profitable commodity.

The Quince.

This is much cultivated, and grows well in any low-lying good land. It is much in demand for jams and jellies, but from the supply being rather large, the price of the fruit at present is considered low. Probably, when the fruit evaporator comes into more general use, the value will be greater. It is a hardy tree, and requires but little trouble in growing, pruning, &c.

The Raspberry.

In many parts of the Colony this can be grown to perfection. In and around Lillydale, Daylesford, and the Western District, very large plantations have been made. The fruit is in great demand in the season from private persons, who buy largely of this delicacy to manufacture their own jam in preference to buying the adulterated article, which is placed upon the market under the name of "raspberry jam."

The Strawberry.

Although one of the finest early dessert fruits, the large amount of labour expended on strawberry culture renders it in many places unprofitable, especially as of late years the *Tyloderma fragariæ* (or brown borer) has committed great ravages, entirely destroying whole plantations; and as a complete remedy for this pest, there appears nothing but eradication and burning. There is always a great demand for the fruit in populous districts, and as many tons finds its way into jam factories as are consumed in dessert.

The Gooseberry and Currant.

These can almost be classed together, as far as cultivation and demand for the fruit is concerned, being adapted for preserves, dessert, or wine-making. They will always be extensively grown and used, both for home consumption and export. They are both very valuable fruits, and deserve a large amount of cultivation.

There are many minor fruits which in time will, no doubt, be introduced into these Colonies, but the foregoing are at present the ones which can be profitably increased.

The fruit growers would, no doubt, be greatly benefitted, and their future welfare ensured to a very great extent, by the various Governments giving greater facilities for *cheap* transit over all railways, in refrigerating cars, or other carriages adapted for speedy conveyance of fruit throughout the Colonies. Also the fitting of the mail steamers with refrigerating chambers for transmitting fruits of all kinds to England, India, &c., &c., at reasonable rates, and also the granting of bonuses to companies or private individuals for the production of a given quantity of the best preserved fruits and vegetables of the varieties best adapted for exportation or home consumption, such as raisins, figs, apples, pears, quinces, apricots, peaches, plums, &c., also potatoes, onions, carrots, parsnips, sweet herbs, &c., &c.

The total value of dried, preserved, and fresh fruit imported into the Colony of Victoria during the year 1886 was 217,589*l.* The total value of dried, preserved, and fresh fruit exported during the same period was 75,162*l.* The value of fruit imported was therefore larger by 142,427*l.* than the value of the fruit exported from the Colony.

South Australia.

The following Report on the fruits of South Australia has been prepared for the Government by Mr. John F. Pascoe:—

I. The order of importance is, to a certain extent, a matter of opinion, and varies slightly in periods of years. Until within the last four or five years, I considered the apple our most important fruit, but since that terrible pest *Fusicladium*, commonly called "Black Spot," appeared

in our orchards, and made such sad havoc, our apple crops have gradually decreased, and now they are of small commercial value; but I am hoping and believe this visitation is only temporary, and that it will disappear in time, as other pests have before, but it will take us many years to recover our former position. The fruits we grow are,—grapes, apples, apricots, pears, peaches, oranges, lemons, quinces, plums, cherries, loquats, raspberries, gooseberries, strawberries, currants, red and black, almonds, figs, walnuts, chestnuts, limes, nectarines, mulberries, pomegranates, olives, guavas, and hazelnuts. These are mostly grown in large quantities, and generally equal to fruits of the same kinds and varieties as can be grown in any part of the world. We also grow, in small quantities, citrons, shaddocks, blackberries, passion fruit, medlars, and white currants.

II. The quantities available for export I cannot give; I can only state whether obtainable in large or small quantities:—

Name.	When in Season.	—	Local Prices.
Grapes	January to May	Unlimited quantities	7*s.* 6*d.* to 10*s.* per cwt.
Apples	January to October	Large „	2*s.* 6*d.* to 5*s.* per bush.
Apricots	December to January	Unlimited „	16*s.* to 24*s.* per cwt.
Pears	December to July	„ „	3*s.* to 6*s.* per bush.
Peaches	December to February	„ „	16*s.* to 24*s.* per cwt.
Oranges	May to October	Large „	8*s.* to 12*s.* per bush.
„	October to December	Limited „	12*s.* to 16*s.* per bush.
Lemons	Generally about same as oranges. Quantities grown not nearly so large, but demand not so great.		
Quinces	March to May	Unlimited quantities	2*s.* 6*d.* to 3*s.* 6*d.* per bush.
Plums	December to April	„ „	6*s.* to 8*s.* per bush.
Cherries	November and December.	Large „	3*d.* to 4*d.* per lb.
Loquats	October to January	Unlimited „	14*s.* to 21*s.* per cwt.
Raspberries	December	Medium „	3*d.* to 4*d.* per lb.
Gooseberries	September to November.	Large „	4*s.* to 6*s.* per bush.
Strawberries	October to December	„ „	4*d.* to 8*d.* per lb.
Currants (Red)	November and December.	Medium „	4*d.* to 5*d.* per lb.
„ (Black)	December and January	Small „	4*d.* to 5*d.* per lb.
Almonds	Fit to gather in January and February; procurable all the year. Grown in large quantities.		5*d.* to 6*d.* per lb.
Figs	Not fit for export; will not stand the long journey. Grown in large quantities.		
Walnuts	Harvested in March; procurable for greater portion of the year. Grown in small quantities.		9*d.* per lb.
Chestnuts	April and May	Limited quantities in husks.	5*d.* to 6*d.* per lb.
„	„	Limited quantities, clean nuts.	9*d.* per lb.
Limes	May to October	Small quantities	Nominal.
Nectarines	February	„ „	8*s.* to 12*s.* per bush.
Mulberries	—	Unlimited „	Nominal.
Pomegranates	March to June	Medium „	Nominal.
Olives	Grown in large quantities. No demand for the fruit.		4*s.* to 8*s.* per cwt.
Guavas	Grown in small quantities. No demand for the fruit.		Nominal.
Hazelnuts	Grown in small quantities; little demand; clean nuts.		6*d.* to 7*d.* per lb.

III. Cannot give quantities or value.

No dried fruits exported worth mentioning, except almonds; and, considering that, with our excessive duties on dried fruits, we cannot keep them out of our market, we are not likely to export any.

Grapes are exported to Victoria in large quantities, and realise good prices; formerly we exported to all the neighbouring Colonies, especially New South Wales and New Zealand, but of late years those Colonies have prohibited their importation in the regulations for preventing the spread of "Phylloxera," a disease, I am happy to state, that does not exist in our Colony. Last year New South Wales relaxed the conditions with regard to the mining district of Silverton. We send a few cases there now, and when the railway is completed, shall probably send large quantities.

Apples are shipped to New South Wales, Queensland, Western Australia, Mauritius, Ceylon, and, for several years, in limited quantities to England.

Pears to Western Australia, Victoria, New South Wales, and Queensland, and to England in small quantities.

Apricots in large quantities, chiefly to Victoria.

Peaches in large quantities, chiefly to Victoria.

Loquats: during the season the trees bear heavily, these are sent in large quantities to Victoria.

Almonds to Victoria and New South Wales in large quantities.

Chestnuts to New South Wales in limited quantities.

Navel (Bahia) oranges to Victoria in limited quantities at satisfactory prices.

IV. All the fruits mentioned in reply II. can be grown in unlimited quantities. We have the soil, climate, and the will, but want the incentive, that is, a market to which we can send with a chance of getting a fair return. For many of our fruits the English market is available, but we want cheaper freights, reduced incidental expenses, and a guarantee for fair and proper returns.

A bushel of apples costing in Adelaide 4*s.*, sent to England in the ordinary way, would have to realise nearly 9*s.* to pay the shipper net cost. To give you an example,—

Per Orient steamer "John Elder," I sent last year to the Colonial and Indian Exhibition, 50 cases of fruit, which realized—

	£	*s.*	*d.*
	55	3	0

A good price, and ought to have shown good profit; but the expenses were—

	£	*s.*	*d.*	£	*s.*	*d.*
Commission, &c. on sale by Commissioners	33	15	4			
Freight and incidental expenses	7	14	0			
				41	9	4
				13	3	8
Deduct cases				2	10	0
				£11	3	8

or about 4*s.* 6*d.* per bushel net returns. Considering this lot consisted of the choicest samples obtainable, it certainly gives very little encouragement. It is incidents of this kind which disgust shippers.

V. The quantities of fruits imported into this Colony are limited, our local supplies of popular fruits being in excess of all demands.

Hitherto we have been importing large quantities of oranges from New South Wales, but our supplies now equal the demand, and all being well in a few years we shall have large quantities for export. Pine-apples, bananas, and passion fruit are brought in limited quantities from Fiji and Queensland, but the quantities are very small.

VI. I do not know that I can say much on this point, South Australia has always been noted for the excellent quality of its fruit, and taking it on the whole, I doubt if there is another country on the face of the globe that can produce in such abundance all those popular fruits needed by civilised communities. For a quarter of a century we have been exporting large quantities, but at present our orchards are under a cloud; they are terribly infested with pests, insect and fungoid, I believe, temporarily, but while they exist, a large portion of our population suffer great pecuniary loss. The kinds most afflicted are apples, pears, apricots, peaches, almonds, cherries, and oranges. Growers have tried all the remedies suggested with little or no good effect, what is wanted is a thorough scientific examination of our soils, &c. for the purpose of putting us on the right track for combating and annihilating our fruit-growing enemies; private persons can only do this on a small scale; to be effectual it must be done by the Government or societies.

The following supplementary Report has been prepared by Mr. Thomas Hardy:—

I. Grapes, apples, apricots, oranges, lemons and citrons, plums of all kinds, pears, peaches, cherries, quinces, gooseberries, raspberries, nectarines, almonds, walnuts, chestnuts, filberts and hazelnuts, loquats, pomegranates, guavas, &c.

II. Grapes from December to May. Apples from November to May. Apricots from December to January. Oranges from May to December. Lemons all the year. Plums from November to March. Cherries, November. Pears from December to April. Peaches from December to March. Loquats from October to November. Nuts from January to March. (The quantities available for export, and prices could be given better by Mr. J. F. Pascoe, who is both a grower and dealer in fruits.)

III. Grapes are exported in large quantities to Melbourne; no other fruit is exported in any quantity.

IV. There is scarcely any limit to the capable production of fruits in the neighbourhood of Adelaide. The orange and lemon, the vine and almond, flourish in the warm plains, the apple, plum, and berries flourish in the hills as well as in any country in the world.

The principal things wanted to open up and extend the trade in fruits, are cheaper freights, more honesty in the dealer in fruit in England, better knowledge of the kinds of fruit required to suit the markets, and the best time of the year to send away from here.

V. Considerable quantities of oranges are still imported from Sydney; also from Europe, large quantities of dried fruits, principally currants and raisins, which could all be produced here.

VI. The grapes grown near Adelaide are the finest produced in Australia, and for the last 35 years have taken first place in the Melbourne Market. A large quantity of grapes were formerly exported to Sydney and New Zealand; but for the last three or four years have been prohibited, owing to the Phylloxera scare and the desire to shut out the competition of this Colony's produce among the growers in these Colonies. The Phylloxera never having appeared in this Colony, there is no valid reason for our grapes being prohibited in any of the Colonies.

There are no native fruits of any commercial value in this Colony.

Western Australia.

The following is an extract from a despatch from Sir F. Napier Broome to Sir H. Holland, dated Perth, Western Australia, 21st April, 1887, No. 84:—

I also enclose, for transmission to the Director of the Royal Botanical Gardens at Kew, a paper containing information respecting the fruit production of the Colony.

Numerous tracts of land in Western Australia are admirably suited for the cultivation of the grape. I believe it would be a very remunerative commercial speculation to make wine for the French market. A strong full-bodied and well-tasted wine of a Burgundy character, could be easily and cheaply produced in any quantity, and I feel sure it would command a ready market, not only for consumption, but, and perhaps chiefly, for mixing with French wines, for which purpose I am led to believe it would be most valuable and sought after. The vine disease of *Phylloxera* is unknown in Western Australia. If French wine growers or merchants could be made aware of the unlimited source of wine supply which might easily, quickly, and inexpensively be developed in Western Australia, I feel sure that the matter would have their attention. Were a company formed to start a large vineyard, I think the Government would be able to give some assistance in procuring a suitable block of land.

The following are the chief fruits grown in Western Australia:—

No.	Local Name.	When ripe.	Value.
1	Grape	December to April	8*l.* to 16*l.* per ton.
2	Apple	January to July	18*s.* per cwt.
3	Orange	June to October	1*s.* 6*d.* per doz.
4	Lemon	„ „	1*s.* „
5	Pear	December to August	4*d.* „
6	Fig	December to March	1*d.* „
7	Peach	December to May	3*d.* „
8	Apricot	December to July	6*d.* „
9	Cape Gooseberry	All the year	6*d.* per qt.
10	Plum	January to March	—
11	Loquats	September to October	10*s.* per cwt.
12	Banana	January to July	1*s.* per doz.
13	Quince	February to March	5*d.* „
14	Strawberry	October to June	1*s.* per lb.
15	Melon (water)	January to March	4*s.* per doz.
16	Melon (rock)	„ „	4*s.* „
17	Mulberry	„ „	No value.
18	Pomegranate	February to March	8*d.* per doz.
19	Gooseberry	January. Small supply	—
20	Currants		
21	Cherries		
22	Almond	February	15*s.* per cwt.
23	Medlar	February. Very few grown	—
24	Guava		
25	Olive	June and July	No value.

None of the above fruits are produced at present in sufficient quantities to export, but under favourable circumstances they are capable of being produced in large quantities, particularly grapes and oranges, kernel fruits, as apples, pears, &c., stone fruits, as peaches, plums, apricots, &c. There are thousands of acres of land which would be suitable for fruit-growing, but it requires capital to develop this industry.

At present the supply of fruit is only sufficient for the wants of the inhabitants, and until more land is brought under cultivation by imported labour and capital, there will be no fruits exported.

Oranges and apples are imported into the Colony from Adelaide, Melbourne, and Tasmania during the time that these fruits are scarce in the Colony.

Besides the above-named fruits there are many others which could be cultivated in the more northern parts of the Colony, and others in the southern.

The vine grows well anywhere between the Blackwood and Geraldton. Omitting unsuitable portions, there would be, at a low estimate, 5,000 square miles suitable for the growth of the vine. The citrus tribe do well in the same latitude as the grape, but they require a moister soil. There is a large extent of gravelly loamy soil east of the Darling range very suitable for peach trees.

The cultivation of fruits requires more capital to start with than other agricultural pursuit, and there are very few in this Colony who can afford to wait a number of years before they receive any return for the outlay.

Tasmania.

On the fruits of Tasmania, the following Report has been received through the Governor of Tasmania, prepared by Mr. F. Abbott, Superintendent of the Botanic Gardens, Hobart Town :—

The apple, *Pyrus Malus*, is extensively grown, and the fruit attains a degree of perfection not ordinarily reached in the other Australian Colonies. Tasmanian grown apples are celebrated for their flavour and keeping qualities.

The early kinds, such as Juncating, begin to ripen late in January, but the bulk of the exported fruit is gathered from March to the end of May ; some of the best keeping varieties keeping sound up to Christmas, or till the early apples are fit for use.

The pear, *Pyrus communis*, is also extensively grown, and exported to the other Colonies, and the same remarks as to quality would apply as in the case of the apple ; the season is not quite so extended, the better kinds being over by the end of July.

The plum, *Prunus domestica*, is largely grown, principally for the manufacture of jam ; the better kinds are also exported in a fresh state, the season being from January to April.

The apricot, *Armeniaca vulgaris*, is also grown in quantity principally for the manufacture of jam ; the trees fruit comparatively early, and the crop, which is in season from January to March, is considered a very paying one.

The peach, *Persica vulgaris*, grows well in suitable soils ; grown as standards it fruits very freely, and is of good flavour. The fruit is seldom exported, but is used for local consumption, and hence it has not been very extensively planted.

The nectarine, *Persica lævis*, is not extensively grown ; it does not fruit so freely as the peach, and is more subject to the curl and other diseases.

The gooseberry, *Ribes Grossularia*, is largely planted, the fruit being used both for the manufacture of jam and also for export in a green state. The berries attain a large size in suitable situations, and the crop is usually a heavy one. Fruit in season from middle of November to middle of January.

Currants, *Ribes*, red, black, and white. The two former are largely grown for the manufacture of jam, the fruit commencing to ripen in the warmer parts of the Colony in December, and in the latest districts it will hang on the bushes till late in April. The plants bear very abundantly in suitable soils, the fruit being so plentiful as not to pay for picking.

Raspberry, *Rubus Idæus*. This fruit is very extensively grown in the moist bottom lands of the Colony, the canes fruiting abundantly ; the crop at times is so heavy as not to pay for picking, and large quantities in the country districts go to waste for want of a market. The fruit is much esteemed for the manufacture of jam, and it is exported in bulk to the neighbouring Colonies, to be used for the same purpose.

Grapes, *Vitis vinifera*. These do fairly well in the warmer parts of the Colony ; the earlier kinds, such as Chasselas, Black Hamburg, Sweet Water, and Wantage, ripening well in all seasons ; but except for local consumption, the cultivation of grapes would not prove satisfactory in Tasmania generally. The warmer climate of the neighbouring Colonies gives them a decided advantage in this culture. Tasmania could never hope to compete with her neighbours successfully in the production of grapes.

Strawberries, *Fragaria*, are extensively grown, both for local consumption and preserving, and to a limited extent for export. The fruit grows in great perfection, and attains a high flavour, much above that of the warmer Colonies. The Marguerite commences to ripen at the end of October, and is succeeded by Trollop's Victoria and the British Queen, the latter keeping up the supply well into January ; in moist seasons small gatherings may be had even as late as May.

Walnuts, *Juglans Regia*, almonds, *Amygdalis communis*, chestnuts, *Castanea vesca*, are all cultivated to a limited extent, and thrive well. The walnut is the most extensively grown, and the nuts are ready for export during March and April.

Filberts, *Corylus Avellana*, do well, and fruit freely in suitable soils ; they are not as yet extensively cultivated.

The quince, *Cydonia vulgaris*, medlar, *Mespilus germanica*, fig, *Ficus Carica*, mulberry, *Morus nigra*, and blackberry, *Rubus fruticosus*, are all cultivated to a limited extent, but only for local consumption. A demand has lately sprung up for blackberries for the manufacture of jam, which may lead eventually to the cultivation of the better varieties of this fruit to some extent. The bushes fruit abundantly in suitable situations. The cultivation of the principal fruits has hitherto been regulated by the demand for the different kinds. Various parts of the Colony are well suited to the successful culture of all the foregoing kinds with the exception of figs and grapes, which need a greater amount of heat to thoroughly mature them than they usually get in Tasmania.

The climate of Tasmania being cooler and less exciting than that of the neighbouring Colonies, is better fitted to bring out the good qualities of all ordinary English fruits, and thence Tasmania-grown apples and pears

are better flavoured as a rule, and are endowed with better keeping qualities.

Provided a payable market can be obtained, there is practically no limit to the quantity of fruit that could be produced in Tasmania. The cooler climate would give her an advantage in the production of fruit for export, as it would naturally possess better keeping qualities.

New Zealand.

Mr. W. de G. Reeves, Officer in Charge of the Agricultural Department, has furnished a memorandum on the fruits of New Zealand, as follows :—

The following are the answers to the questions contained in Mr. Stanhope's circular.

I. The chief fruits grown in the Colony are the Apple (*Pyrus Malus*), the Plum (*Prunus domestica*), the Pear (*Pyrus communis*).

The following are also grown, but not to the same extent: Strawberry (*Fragaria vesca*), Currants (*Ribes rubrum et nigrum*), Gooseberry (*Ribes Grossularia*), Tomato (*Lycopersicum esculentum*), Raspberry (*Rubus Idæus*), Cherry (*Prunus Cerasus*), Peach (*Persica vulgaris*); and in the north, oranges and lemons are grown in small quantities.

II. Apples last from January to September; plums from January to March; pears from February to June; strawberries from October, in the north, to December in the south; currants and gooseberries during November and December; tomatoes from end of January to April; cherries during December; peaches from February to end of March.

The Colony has no fruit to export: on the contrary, we import large quantities.

The wholesale prices are ruled by the prices obtained for the fruit imported from Australia and Tasmania, and are as follows :—

Apples from 3*s.* to 12*s.* per bushel of 40lbs.
Plums „ 6*s.* to 15*s.* „ „
Pears „ 10*s.* to 17*s.* 6*d.* „ „

These prices vary according to the quality of the fruit and the season of the year.

III. Practically the Colony has no fruit to export. For the year ending March 31, 1886, the total value of New Zealand-grown fruit exported was 179*l.*

IV. All the fruits mentioned are capable of being produced in very much larger quantities than at present; in fact, the Colony ought to be able to supply all its own wants in fresh fruits as well as in jams. Fruit-growing in the Colony is in a very backward condition, but more attention is now being paid to it, and the industry under proper management and systematic cultivation will no doubt gradually become a large and profitable one, so that in course of time we may be in a position to export our surplus.

V. Every kind of fresh fruit that will stand a sea voyage from Australia, Tasmania, the South Sea Islands and the United States, such as apples, pears, plums, peaches, cherries, oranges, lemons, pine apples, cocoanuts, &c.

In an addendum to Mr. Reeves's Report, furnished by Mr. Thomas Kirk, Chief Conservator of State Forests, it is stated that—

The Vine is cultivated in many parts of the North Island, and at Nelson in the South Island. At Whangarei (North of Auckland) it is

extensively grown in cold vineries: the produce realizes about one shilling (1*s.*) per lb. wholesale.

The quality of the apples and pears grown here is unexceptional both with regard to appearance and flavour. It is fully equal to the best produce of the British Islands, and vastly superior to the American and Tasmanian fruit.

The cultivation of these fruits is extending with great rapidity under the attractive prospect of exporting high-class qualities to Europe and the United States during the months when their markets are most bare. Much, however, has to be done in the way of learning the best method of packing for so long a voyage.

The Government is desirous to afford every facility for the extension of the industry, and has sanctioned the inclusion of Pomology in the course of instruction to be given in the School of Forestry and Agriculture now being established in Whangarei.

I venture to draw attention to the remarks on this subject to be found at pages 5 and 6 of a paper on the proposed School of Forestry laid before the General Assembly during its last session; also on pages 4 and 5 of the Progress Report of the State Forests Department, copies of which are forwarded herewith.

The following are the remarks to which reference is made in the previous paragraph:—

The rapid development of fruit-culture in the Colony, and the important position which it is fast attaining as a leading industry, render it most advisable that its pursuit should be encouraged as far as possible without undue interference on the part of the State. It is, therefore, proposed that the school should afford facilities for acquiring a comprehensive knowledge of pomology, in addition to forestry and agriculture. Instruction in this important branch of industry may be given without any increase in the cost of the teaching-staff.

* * * * * *

The proper training of youth as fruit-growers necessarily includes those matters generally recognized by intelligent settlers as essential to success in fruit-cultivation, the preparation of the soil, and its adaption to the requirements of the particular kind of plant in question; planting, as distinct from "sticking a plant in the soil"; heading down in the early stages; summer and winter pruning, &c.; but these subjects, great as their importance may be, are less important than others which, at present, have received but little attention.

Of these, one of the most important is the selection of suitable stocks. Except in a single direction this subject is entirely neglected in the Colony. Its importance is capable of easy illustration: a few years ago apple-cultivation was in danger of becoming unprofitable in all the Australian Colonies, owing to the ravages of the American blight; when it was discovered that the Majetin, Northen Spy, and a few other kinds were rarely attacked by the insect, and, even when attacked, they suffered but little. This led to experiments with these blight resisting kinds as stocks for more susceptible varieties; and the experiments proved successful.

* * * * * *

The peach affords an instance of almost equal value. Had the ordinary European plan of working this fruit on the Mussel stock been adopted in the Australian Colonies, we should have escaped the terrible destruction which has overtaken the trees during late years, and they would have been able to endure unfavourable seasons without any serious results. No more striking instance of this could be required than was to be seen in an Auckland nursery, where the only trees in

good health, not excepting seedlings a few inches in height, were two imported plants worked on the Mussel stock.

* * * * * *

Another important subject, which in some districts is crippling the fruit industry and reducing the yield to a point which affords no profit, is the prevalence of fungoid and insect pests. I need not insist here upon the extent of the injuries arising from these causes, but will direct attention to the advantages to be derived from a course of training that would enable the fruit-grower to recognize the different kinds when they make their first appearance, and teach him the lines upon which they can be most successfully encountered.

A subject entirely neglected by colonial fruit-growers at present, but which must receive a large amount of attention before New Zealand-grown fruits can take their proper place in the markets of America and Europe, is that of packing. The wealthy cities of Great Britain, the Continent of Europe, and the United States, will be the most profitable customers of colonial fruit-growers; but not until they have learned to grow the best kinds, and to pack them in such a manner that injury during their transit will be reduced to a minimum. Other advantages might be mentioned; but those already stated are sufficient to indicate the benefit to be derived by establishing a school of pomology.

Although the orchard must be looked upon as a source of revenue, and must therefore be of large extent, it will scarcely be advisable to plant the entire area to be devoted to fruit-growing at once. Probably to lay down five acres in fruit trees will be found as much as can be accomplished this season, and the area should be extended yearly until 100 acres are devoted to fruit-growing. After the second year most of the stocks should be grown on the school reserves, and grafted or budded by the students. This would reduce the cost of formation to a minimum, and give the students greater interest in their work. Every year the newest varieties should be introduced from Europe and America, and their adaptability to the climate of New Zealand properly tested. The school would thus become, not merely an institution for training fruit-growers, but a most efficient means of diffusing pomological knowledge and assisting an important branch of industry.

Cape Colony.

In a Minute addressed by the Ministers to the Governor, Mr. J. Gordon Sprigg states; "Adverting to his Excellency the Administrator's Minute of the 21st December last, forwarding a copy of a "despatch from the Right Honourable the Secretary of State for the "Colonies . . . . . and with particular regard to paragraph three "of the said despatch, relative to an application for information on "colonial fruits made by the Director of the Royal Gardens, Kew, the "Ministers beg to submit, for transmission, the returns enumerated in "the subjoined schedules."

The schedules, as received from Cape Colony, consist of tabular matter arranged in such a manner that it cannot be conveniently reproduced here. Schedules 1 and 2 are, however, given in full in the supplement to the Cape of Good Hope *Government Gazette*, April 15th, 1887. Those interested in the subject, and anxious to consult this supplement, could no doubt do so on application at the office of the Agent General for the Cape Government, 7, Albert Mansions, Victoria Street, S.W.

The substance of the information received from the Cape Government on colonial fruits for exports is given below.

The abstracts of schedule returns showing kinds and prices of fruit grown in the several divisions of Cape Colony, are published with special reference to the export of fruit. It appears from the numerous suggestions made, that before a trade in fruit can be established with Great Britain, *cheap* and *speedy* transit to coast ports, and *low* freights thence must be secured. Information has been sought as to the stage of ripeness at which the different kinds of fruits should be picked, and as to the proper method of packing. It has also been proposed that inquiry should be made into the prevailing diseases of fruit trees.

The principal fruits cultivated in Cape Colony, and likely to be suitable for export, are apples, apricots, bananas, figs, Cape gooseberries (Physalis), grapes, lemons, melons, nectarines, oranges, peaches, pears, pomegranates, plums, quinces, almonds, and walnuts. Most of these fruits could be grown in very large quantities in Cape Colony, if sufficient inducements were held out.

Apples

Are widely and generally cultivated. They are in season from January to March. The local prices vary from 4*d.* to 3*s.* per 100 in Cape Town to about 6*s.* per 100 in Humansdorp.

Apricots

Are very abundant. They are in season from December to February. The local prices vary from 3*d.* per 100 in the Robertson division to about 4*s.* per 100 in Cape Town.

Bananas.

These are confined to warm, sheltered, and well-watered divisions. They are in season nearly all the year round. The local prices vary from 1*d.* each to 6*s.* per 100.

Figs

Grow in several divisions of the Colony "to perfection." They are in season from December to April. The local prices at Worcester are 2*s.* 6*d.* to 3*s.* 6*d.* per bushel; at Piquetberg, 6*d.* per 100; at Fort Beaufort, 9*d.* to 1*s.* 6*d.* per 100.

Cape Gooseberries

Are derived from a species of Physalis (natural order *Solanaceæ*). They are semi-cultivated and wild; they make admirable preserve; very abundant, and when sold, can be bought for 2*s.* per basket.

Grapes

Are more largely produced than any other fruits, and they could be shipped in the proper seasons in immense quantities. They are in season from December to March. The local prices vary considerably. At Clanwilliam, the price is 2*s.* 6*d.* per bushel; at Malmesbury, 1*s.* 6*d.* per bushel; at Paarl, 1*s.* per bushel. The price per pound varies from ½*d.* to 1*d.* per pound at Robertson to 3*d.* per pound at Queen's Town, and 6*d.* per pound at Albert.

Lemons

Are in season from March to October. The price locally varies from 1*s.* per 100 at Riversdale to 6*s.* per 100 at Albert.

Melons.

Are produced in large quantities. They are in season from January to April. The local prices are 2*d.* to 1*s.* each in Stellenbosch, and as high as 4*d.* to 2*s.* 6*d.* each in Cape Town.

Oranges

Are not so plentiful as some of the other fruits, and the local prices vary from 2*s.* per 100 to 7*s.* per 100.

Peaches

Are in season from January to March. They are sold locally at Robertson at 3*d.* to 9*d.* per 100; at Oudtshoorn at 6*d.* per 100; at Worcester at 2*s.* per bushel.

Pears

Of excellent quality are grown in the Albert, George, and the Oudtshoorn divisions. They are in season from January to March. The local prices are 3*s.* per bushel in the George Division, 1*s.* 6*d.* to 6*s.* per 100 in Cape Town, and 1*s.* per 100 in the Swellendam Division.

Pomegranates

Are only sparingly cultivated. The local prices are 1*s.* 6*d.* to 2*s.* per 100.

Plums

Are in season from December to February. At Worcester they are sold at the rate of 3*s.* per bushel. In the George Division at 4*s.* 6*d.* to 10*s.* per bushel. In other divisions the prices range from 9*d.* to 3*s.* 6*d.* per 100, according to quality.

Quinces

Are in season from December to March. They are said to grow wild at Riversdale. In most divisions they are abundant and obtainable at prices ranging from 1*d.* to 3*s.* per 100.

Almonds and Walnuts

Are in season from January to March. The local prices vary from 3*d.* to 9*d.* per pound.

The information supplied as regards the quantity of fruit produced in each division and available for export is of a very useful character. The following particulars relate to the circumstances of each division or district, as supplied by the Civil Commissioners, assisted by reports from fruit cultivators.

Albert Division.

The climate and soil are particularly adapted to the extended growth of the fruits specified above, except plums, oranges, and lemons. The quantity of fruit annually available for export purposes is,—apples, 5,000 bushels; apricots, 3,000; figs, 10,000; Cape gooseberries, 100; lemons, 1,000; nectarines, 1,000; oranges, 1,000; peaches, 10,000; pears, 5,000; plums, 500; quinces, 20,000.

Cathcart Division.

Apples, apricots, grapes, nectarines, peaches, pears, plums, quinces are obtainable at 1*s.* 6*d.* per 100, on the average, from January to May.

The quantity available for export is,—apples, 300 tons ; apricots, 150 ; peaches, 300 ; pears, 150 ; nectarines, 150 ; plums, 100 ; quinces, 100.

Clanwilliam Division.

From this division large quantities of fruit are sent to other districts in the Colony. Grapes are usually sold at 2*s.* 6*d.* per bushel, and melons at 30*s.* per load. Guavas at 1*s.* 6*d.* per 100 are available from March to August.

George Division.

The fruit available for export is as follows :—Apples, 3,000 bushels ; apricots, 2,000 ; figs, 1,000 ; oranges, 50,000 (in number) ; peaches, 1,000 bushels ; pears, 5,000 ; plums, 500 ; quinces, 1,000 ; grapes, 3,000 baskets : the latter are sold at 2*s.* per bushel ; figs at 6*s.* per bushel ; apples at 3*s.* per bushel.

Humansdorp Division.

Large quantities of oranges, lemons, quinces, apples, and pears available for export.

Ladismith Division.

The fruit grown in this division is of superior quality. "The wild "plum grows luxuriantly, and [the kernel] yields an excellent oil of "great medicinal properties." Large quantities of fruit are available for export.

Malmesbury Division.

Grapes and melons are grown in large quantities ; other fruits in fair quantities. Grapes are sold wholesale locally at 1*s.* 6*d.* per bushel.

Oudtshoorn Division.

It is stated in the Report that a model farm should be established in this division, and plants of choice fruit trees supplied to growers. Any quantity of grapes, oranges, lemons, peaches, figs, and quinces ; a large quantity of melons, apricots, apples, and pears ; and a limited quantity of plums, nectarines, pomegranates, almonds, and walnuts could be grown. Figs are sold locally at the rate of 3*d.* per 100 ; apricots, 6*d.* per 100 ; lemons, 7*s.* 6*d.* per 1,000 ; oranges, 20*s.* per 1,000 ; peaches, 6*d.* per 100.

Paarl Division.

In addition to the fruits already enumerated, it is stated that the olive, granadilla (*Passiflora edulis?*), loquat, mulberry, are also grown in this division. Guavas are sold at 1*s.* to 1*s.* 3*d.* per 100 from April to August. Cape gooseberries, 4*d.* per pound ; grapes, 1*s.* per bushel ; pears, 1*s.* to 1*s.* 6*d.* per 100.

Murraysburg Division.

Although late frosts, hailstorms, and drought affect the fruit supply, large quantities of peaches, apricots, pears quinces, apples, and figs are available for export. Apples, peaches, pears, apricots, and figs usually sold at 1*s.* per 100.

Piquetberg Division.

The chief items of fruits suitable for export are grapes and oranges. About 100,000 baskets of grapes and 500,000 (number) oranges would be available for this purpose. Loquats, mulberries, and chestnuts are also grown in small quantities. Figs, 6*d.* per 100 ; Cape gooseberries, 2*s.* per basket ; lemons, 9*d.* per 100 ; oranges, 3*s.* 6*d.* per 100.

Queen's Town Division.

To establish a trade in fruit it is necessary that there should be a guaranteed market at more than local rates; formation of an export company; nominal railway rates and freights; and Government aid in experiments, and in securing proper accommodation on board ship.

Robertson Division.

Fruit of almost any known kind thrives to perfection. A syndicate should be formed, land purchased for fruit growing, and the work of a fruit growers' association carried out. At present there are available for export:—Apples, 8,000 pounds; apricots, 5,000; bananas, 5,000; figs, 20,000; peaches, 80,000; pears, 20,000; plums, 1,000; quinces, 60,000; grapes, 12,000,000. Apples, 6*d.* to 9*d.* per 100; grapes, ½*d.* to 1*d.* per pound; lemons, 1*s.* 6*d.* to 2*s.* 6*d.* per 100; peaches, 3*d.* to 9*d.* per 100; quinces, 1*d.* to 2*d.* per 100.

Stellenbosch Division.

Large quantities of strawberries are sent daily, throughout the whole season, to Cape Town and Kimberley. To increase a fruit trade an export company should be started with English capital. Available for export:—Apples, 100 tons; pears, 75 tons; quinces, 20 tons; melons, 150; grapes, almost any quantity; pomegranates, almost any quantity. Grapes, 1*s.* 6*d.* to 3*s.* per bushel; pears, 1*s.* to 3*s.* per 100.

Stockenstrom Division.

The following quantities available for export:—Apples, 100,000 (number); figs, 300,000; oranges, 700,000; peaches, 7,000,000; pears, 50,000; plums, 25,000; quinces, 1,000,000.

Worcester Division.

There is an unlimited quantity of exportable grapes at 2*s.* per bushel; in season from January to March. Peaches at the same price, and quinces at 1*s.* per bushel. Steamers are required fitted up with refrigerating chambers. Home duty on raisins of 7*s.* per cwt. is too heavy.

In the Albany Division the growing trade in fresh fruit with Kimberley has given rise to extended cultivation. The King William's Town Division is well adapted to the growth of oranges, pears, figs, apples, apricots, nectarines, guavas, and granadillas. In the Bathurst and Peddie Divisions, pine-apples are obtainable at prices ranging from 4*d.* to 9*d.* each in December and January.

The fruit exported from Cape Colony during the year ended 31st December 1886, consisted chiefly of raisins, 353,394 pounds of the value of 3,135*l.*, and grapes of the value of 173*l.* During the same period there were imported and entered for home consumption dried and other fruits of the value of 14,888*l.* Amongst the fresh fruit imported there are enumerated: pine-apples from Mauritius of the value of 191*l.*; bananas and pine-apples from Natal of the value of 4,524*l.*; fruit from Victoria of the value of 2,624*l.*; and cocoa-nuts from the Portuguese possessions in East Africa of the value of 306*l.*

There were received at Cape Town by rail from the several divisions, 2,389,953 pounds of fresh, and 969,810 of dried fruits during the year 1886. At Kimberley and Beaconsfield there were received by rail 2,638,539 pounds of fruit during the same period.

Mauritius.

The following Report on the fruits of Mauritius has been prepared by Mr. John Horne, F.L.S., Director of the Botanical Gardens and of Woods and Forests :—

The principal kinds of fruits grown in Mauritius, in order of merit, are : The banana, "Banane," *Musa*, several varieties; the mango, "Mangue," *Mangifera indica*, many varieties ; the pine-apple, "Ananas," *Ananas sativa*, several varieties ; the litchi, "Leechee," *Nephelium Litchi ;* the longan, *Nephelium Longan ;* the alligator or avocada pear, "Avocat," *Persea gratissima ;* the strawberry, "Fraise," *Fragaria vesca*, a few varieties ; the peach, "Peche," *Persica vulgaris ;* the raspberry, "Framboise Maronne," *Rubus rosæfolius* (this plant is indigenous, it is not cultivated in Mauritius) ; the sweet sop, "Atti," *Anona squamosa ;* the cherimolia, "Chermoyer," *Anona Cherimolia ;* the "Curossol," *Anona muricata ;* the bullock's heart, "Cœur de bœuf," *Anona reticulata ;* the "Fruit de Cythère," *Spondias dulcis ;* the guava, "Goyave," *Psidium pomiferum, pyriferum, chinensis* and *Cattleyanum ;* the "Abricot de Pape," *Diospyros Kaki*. There are several other sorts of less importance than the above, as the Malay apple, carambole, mabola, &c.

The banana is ripe throughout the year. Mangoes from October to April, but most abundant in January and February. Pine-apples throughout the year, but most common in December, January, and February. The litchi, from the middle of November or beginning of December to the middle of January. The peach, from middle of November to the end of January. The other sorts follow at various times of the year.

The quantity of fruit available for export from Mauritius on an average of seasons is very small indeed. It takes about all that is grown in the island to supply its inhabitants and the vessels in the harbour.

As to the prices which rule the fruit market here, wholesale and retail, much depends on the scarcity, or otherwise, of the kind of fruit.

The best varieties of mangoes are, when fruit is abundant, retailed at from 25 cents to 50 cents of a rupee per dozen prime fruit.

Wholesale, and purchasing by the hundred fruit at a time at the orchard, the price is from one-half to three-fourths of the retail one, or from R. 1 to Rs. 3 per hundred fruit. In years of scarity the fruit is much dearer. The maximum price, wholesale and retail, just given, may then safely be taken for the minimum prices during such years.

The Indians—natives of India or their descendants—who are the fruit dealers of the Colony, do not care to purchase from the grower in this way. They prefer to purchase from him by the lump, so much for all the fruit on a tree or in an orchard. They then sell the fruit to retailers by the hundred. The litchi, longan, and some other kinds of fruit, are sold in the same way, at from 25 to 50 cents of a rupee per hundred fruit. The wholesale price being at about one-half to three-fourths of the retail one.

The banana is sold at about one-half a cent of a rupee for one fruit. The wholesale price at the plantation is from two to four fruit for a cent of a rupee.

The pine-apple is sold, in retail, at from four cents of a rupee and upwards per fruit, depending on size, quality, and abundance or scarcity of the fruit. The wholesale prices of this fruit, at the plantation, is about one-half to three-fourths of the above sums.

The fresh fruits exported from the Colony in 1885 were valued at Rs. 253. They were sent to the "Cape Colonies." But this export is said to be "not of local origin" in the Blue Book.

However, the shipping which visits the island during a year consumes, while in harbour, quantities of the fruits grown in the Colony; and a good supply is generally taken away for consumption on the voyage. I have not found means to ascertain the value of the latter.

Some bunches of bananas are, I believe, exported to Port Elizabeth; but no value is given for them in the Blue Book as *of local origin.*

Excepting cocoa-nuts, to the value of Rs. 260, that were exported to the "Cape Colonies" in 1885, there were no other dried fruits, the produce of Mauritius, exported in the year just mentioned.

The value of the confectionery made in the Colony and exported from it during 1885, was Rs. 1,085. The most of it was sent to France. The kinds are not given in the Blue Book, but they are supposed to have been mostly pickles and guava jelly.

There is room for all the kinds of fruits grown here being largely extended, even for local supply, let alone exportation.

The country enjoying a temperate climate nearest to Mauritius is the Cape of Good Hope. There tropical fruits do not grow, and there and the interior of South Africa, now opened up by railways, a large market might be obtained for fresh bananas, pine-apples, &c. I have no doubt that the existing small trade in these fruits could be extended, particularly if the Colony enjoys in future regular and rapid steam communication with the ports of South Africa; and the steamship owners grant facilities to shippers, and airy places on board the steamers to store the fruits during the voyage.

Hitherto rapid communication by steamers between Mauritius and South Africa has been intermittent; therefore, there has not been much if any encouragement to plant and grow fruits for export to Cape Ports, where tropical fruits would find a market.

But under conditions of shipping safely and fair profits on consignments a demand would soon arise. This would stimulate cultivators to grow fruits for this market. I have no doubt whatever that tropical fruits, bananas, pine-apples, &c. will readily find a market at the Cape Ports, if they be landed in good condition and sold cheaply.

Even now there is a rumour abroad among the people that the Colony is to withdraw its subsidy from the "Castle Packets Company," whose steamers run four-weekly to the Cape of Good Hope.

Thus, there is not much hope that these or other steamers will run constantly to South African ports, and consequently people are afraid to venture into growing fruit for this trade.

The withdrawal of this subsidy by Mauritius, acts like a premium to the sugar planters and tropical fruit growers of Natal; when the steamers cease to run thence to the Cape ports, Natal commands the markets of South Africa with its sugars and tropical fruits, without opposition.

As to Australia, Mauritius, I am afraid, will be too distant in point of time, to participate in the fresh tropical fruit trade with it.

Since writing the accompanying report, I learn that the "Messageries Maritimes" Company, whose steamers now go direct from Mauritius to Australia, contemplate making Mahé, Seychelles, their head-quarters in these seas, and a branch steamer will carry goods and passengers from Mauritius and Bourbon to Mahé, to unite with the main line between Marseilles and Australia.

Sailing vessels are unsuitable for this trade, between Mauritius and Australia, and South Africa, the duration of their voyages being too long, and too uncertain.

Besides preserving pine-apples, hopes may be entertained that mangoes and litchis can be preserved in syrup and sent to Europe in tins, bottles, &c.

But growing fruits for such a trade does not seem as yet to have gone home to the fruit growers in the island. A gentleman, who was anxious to export preserved pine-apples to the English market, stated that he had offers of large orders for this fruit, which he declined, as he could not depend on getting the quantity of fruit he required at a reasonable price.

But it cannot be anticipated that much will be done here in exporting preserved fruit of any sort until a fruit-canning establishment is started.

This necessary connexion between the consumer of preserved fruit and the fruit grower, if properly dealt with, will supply the incitement which the latter requires: fair prices, ready cash, and a constant demand for his fruit. The cultivator would then know that he is not entering on what to him might seem a hazardous enterprise; and so also will the preserver, when the mutual connexion is understood.

Fruit growing, excepting that of mangoes, litchis, and a few other kinds, and all the fruit trade are in the hands of Indian market gardeners and traders.

If good reliable information was supplied regarding demands and the prices realized for preserved, or even fresh, tropical fruits in Europe, America, or Australia, local men might invest in the enterprises of growing, preserving, and exporting them. But we lack information from these countries on this subject. This information is the foundation stone of the subject. It should be constantly kept before the public in different ways or forms.

Then, to sum up this note, the necessary steps to develop an export trade in fresh fruits, say, between Mauritius and African ports, are:

(1.) Rapid and regular steam communication, giving reasonable facilities to shippers as regards moderate freight and good airy store-rooms, which secure accommodation on board the vessels for the fruits.

(2.) If the contract be renewed, or a new arrangement made between the Government of Mauritius and the Castle Packets Company, or the owners of any other good steamers, to carry the mails regularly between this Colony and the Cape Ports, that arrangements as regards the conditions mentioned in No. 1 be made with such owners.

(3.) At the commencement, that Government grant a bounty or bonus to the exporters of fresh fruits of over certain given quantities.

(4.) In regard to preserving colonial grown fruits in the Colony, that a bonus be also given to any responsible person or company that will start an establishment, at a convenient and suitable place, for preserving or canning fruits in the Colony, both for home consumption and export.

In the meantime, that while under the contemplated altered conditions as regards rapid communication with Australia, the fresh fruit trade with that country may be left alone, and all attention be given to establish this trade between Mauritius and the Cape Ports on a sound footing, and to start a canning establishment in the Colony.

Apples are imported at Mauritius principally from South Australia, and occasionally a few from Europe. Oranges, limes, lemons from Madagascar and Natal, the Cape of Good Hope, Seychelles, Rodriguez, and lately a few boxes from South Australia. These imports were valued at Rs. 6514 in 1885.

Great Britain, Tasmania, the continent of Europe, send us jams, jellies, marmalades, &c.

Preserved fruits, as peaches, apricots, pears, &c., in syrup, were imported in 1885 from Europe, mostly from France. But the value of these is mixed with confectionery; and it is impossible to state the value of them separately. In 1885 the value of imported confectionery was Rs. 45,055.

It may be worth noticing that we receive small quantities of ripe grapes, pears, &c., from South Africa, where at certain seasons of the year these fruits, grapes especially, abound. But such imports have, when made, and from what I have heard on the subject, hitherto been at the mercy of a ring of wholesale purchasers who combine to give their own prices. Thus import enterprise is discouraged, if not carried on at a loss, no matter what the demands of the public may be.

Dried fruits of the following sorts and values were imported during 1885 and consumed in Mauritius :—Almonds (Rs. 2201), mainly from Cape Colonies, India and France; dates (Rs. 2062) from the Cape of Good Hope, India and Muscat; figs (Rs. 16) from the United Kingdom; prunes (Rs. 948) from France; pistachio nuts (Rs. 226) from India and Johanna; raisins (Rs. 3390) from the United Kingdom, India, "The Cape" and France; walnuts (Rs. 361) from Hong Kong and France; of other all sorts (Rs. 274) from the United Kingdom, United States and France.

XXX.—SACCHARINE.

In the inaugural address of Sir Henry E. Roscoe, M.P., F.R.S., to the British Association at Manchester on the 27th August 1886, he drew attention to the chemical principles upon which organic synthesis have been affected. He stated that as soon as the chemical structure of an organic substance has been ascertained, or, in other words, as soon as chemists have carefully analysed and determined the exact constituents of a given organic substance, and the mode in which they are arranged within its molecule, there is open to them by a synthetic process or a building up of such constituents on a definite plan, to produce artificially a substance which hitherto may have only been known as naturally occurring in plants or animals. As instances, he cited the well-known synthesis of the colouring matter of madder by Graebe and Liebermann, and of indigo by Baeyer. Such artificial substances have been rendered possible by an intimate acquaintance with the successive steps by which these substances can be chemically broken up or decomposed. Hence, in a theoretical sense, a chemist should be able to produce artificially almost any substance for which, at present, we are entirely dependent upon certain plants. By a purely synthetic process, chemists may ultimately be able to produce artificial quinine, artificial theine, artificial theobromine, and artificial caffeine. If most artificial substances possessed all the therapeutic or elementary properties of the natural product, and they could be produced in such quantities and at such prices as would compete successfully with them, there is no doubt the growers of cinchona, tea, cacao, and coffee, would have some reason to be alarmed for the welfare of their particular industries. But while we may admit that theoretically it will, in most cases, be possible to produce artificial substances having the same chemical constitution as the natural products, it is very doubtful whether the chemist will, in many cases, find it a remunerative enterprise to compete with the planter. The list of naturally occurring substances which have been already displaced by those artificially produced by chemists is not a large one. But from time to time we are made acquainted with some new substances which have been discovered by chemical research, possessing properties

singularly similar to those which have been hitherto obtained only from certain plants. Of those as mentioned by Sir Henry Roscoe, "the most "remarkable instance is the production of an artificial sweetening agent, "termed saccharine, 250 times sweeter than sugar, prepared by a "complicated series of re-actions from coal-tar." The discoverer of saccharine is Dr. Constantin Fahlberg.

When the announcement of this discovery was first made, followed soon after by the appearance of saccharine as an article of commerce, there naturally arose a well grounded anxiety amongst sugar planters to learn how far this new substance was likely to constitute a competitor with cane sugar. It is admitted that saccharine is now an article of commerce, and that it is anticipated that it will be largely employed for dietetic purposes. It appears to be agreed that saccharine does not undergo assimulation when taken as an article of food, and hence it may be used in cases where cane or beet sugar is forbidden. It may be safely employed, for instance, by diabetic patients and by persons suffering from gouty affections and liver complaints. Further, it is said, that one grain of saccharine is sufficient to sweeten a cup of tea or coffee, and that it is very difficult if not impossible to distinguish whether a beverage is sweetened with saccharine or cane sugar. And lastly, further it is claimed, that saccharine used in sweetmeats does not "create acidity," and in pharmacy its use will afford a wide field of usefulness. The manufacture of saccharine on the other hand, is said to be a costly process, and it cannot at present, nor is it even likely, to be sold as cheaply as sugar.

Having thus briefly summarized what is known of saccharine, it may interest those who are engaged directly or indirectly in the production of cane sugar, to learn the views of so eminent an authority as Sir Henry Roscoe, as to the probable influence of the discovery of saccharine on their particular industry. In reply to a letter addressed to him from this establishment in which it was stated that correspondents in the Colonies were anxious to learn the opinion of those best able to judge as to the future of saccharine, Sir Henry Roscoe expressed himself as follows :—

Sir Henry E. Roscoe, M.P., F.R.S., to Royal Gardens, Kew.

10, Bramham Gardens,
Wetherby Road, S.W.,
December 3, 1887.

My Dear Sir,

In reply to yours of November 28, as to the probable influence of the discovery of saccharine on the growers and makers of sugar cane and cane sugar, I have to say that I do not believe that saccharine is ever likely to become an article of common use like sugar. In the first place, saccharine is not a food, whilst sugar is; and in the second place, I doubt whether saccharine can be prepared at a price likely to compete with sugar.

I think that this artificial sweetening agent will, however, become a useful material in cases in which sugar cannot be employed, as in diabetes and other diseases.

It seems to me beyond the bounds of possibility that the price or production of cane sugar can be materially affected by the introduction of saccharine.

I am,
Yours truly,

D. Morris, Esq. (Signed) Henry E. Roscoe.

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